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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,562	10/15/2004	Aaron Reel Bouillett	PU020123	4174

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EXAMINER

NGUYEN, LEON VIET Q

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/511,562

Applicant(s)

BOUILLETT, AARON REEL

Examiner

Leon-Viet Q. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 24-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 24-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. This office action is in response to communication filed on 1/29/07. Claims 19-23 have been cancelled. Claims 24-26 have been added. Claims 1-18 and 24-26 are pending on this application.
2. Applicant's arguments with respect to claim 1 and 12 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. Claims 25 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Re claim 25, a constellation comprising of an alphabet of N symbols and determining convergence if at least M of the N symbols are represented in the plurality of symbols was not disclosed in the original disclosure.

Re claim 26, M equals N was not disclosed in the original disclosure.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-7, 10-12, 15-18 and 24 are rejected under 35 U.S.C. 102(b) as being unpatentable over Ogawa et al (US5781463).**

Re claim 1, Ogawa discloses an apparatus for determining convergence of an equalizer, comprising:

an equalizer output signal (the output from 1 and 2); and

a monitoring circuit (6, 31, and 32 in fig. 8), the monitoring circuit receiving an output signal (fig. 8, the output of 30) and applying a test criterion to data contained in the decision device output signal so as to determine equalizer convergence (col. 16 line 58-col. 17 line 3, test criterion being a the response to a logic "0" or "1").

In the current embodiment, Ogawa fails to teach teaches a nearest element decision device, the nearest element decision device receiving the equalizer output signal and creating a decision device output signal containing permissible symbol values of a symbol constellation used in transmission of a signal to the apparatus

However, in a different embodiment, Ogawa teaches a nearest element decision device (4A in fig. 3), the nearest element decision device receiving the equalizer output signal ($y(n)$ in fig. 3) and creating a decision device output signal containing permissible

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symbol values of a symbol constellation used in transmission of a signal to the apparatus (col. 11 lines 1-5 and 45-48, the estimated value $w(n)$ is one of the central values of the numerical regions G_1 to G_8 which is part of an 8 VSB code signal)

Therefore, taking the combined embodiments as taught by Ogawa as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the decision device of the second embodiment into the apparatus of the first embodiment. The motivation to combine the two embodiments would be to discriminate to which one of a numerical region that is defined to have a normal code value free from any modulation due to disturbance as a central value (col. 10 lines 42-46).

Re claim 2, the modified invention of Ogawa teaches an apparatus wherein the equalizer is formed to include an infinite impulse response filter (2 in fig. 8).

Re claim 3, the modified invention of Ogawa teaches an apparatus wherein the nearest element decision device is a slicer (4A in fig. 3).

Re claim 4, the modified invention of Ogawa teaches an apparatus wherein the monitoring circuit receives the decision device output signal for a predetermined period of time (col. 7 lines 6-11, the selection unit 6 in fig. 8 is part of the monitoring circuit) representing an acquisition of a desired number of transmitted symbol values (col. 16 lines 52-54, the logic signal from 30 in fig. 8 containing "0" and "1").

Re claim 5, the modified invention of Ogawa teaches an apparatus further comprising a memory (fig. 5), the memory being coupled to the monitoring circuit and being adapted to store decision device output data and test criteria (col. 14 lines 17-20).

Re claim 6, the modified invention of Ogawa teaches an apparatus wherein the test criteria for determining equalizer convergence includes identifying a desired sample of transmitted symbol values (col. 16 lines 58-63).

Re claim 7, the modified invention of Ogawa teaches an apparatus wherein the desired sample of transmitted symbol values includes at least one of every possible symbol value (col. 16 lines 52-54, the logic signal contains the only two possible values "0" and "1").

Re claim 10, the modified invention of Ogawa teaches an apparatus wherein the equalizer output signal includes an image representative datastream containing data packets (col. 4 lines 43-46, the apparatus being a television receiver obtaining a reception image and it is well known in the art that image data can be sent in packets).

Re claim 11, the modified invention of Ogawa teaches an apparatus wherein the monitoring circuit is a microprocessor (31 in fig. 8, it is well known in the art that a counter is a microprocessor).

Re claim 12, Ogawa teaches an equalizer status monitoring device for use in a digital communication system (fig. 8), the device including an adaptive channel equalizer (1 and 2 in fig. 8), a slicer (4A in fig. 8) and a monitoring circuit (6, 31, and 32 in fig. 8), wherein the digital communications system receives a vestigial sideband modulated signal containing high definition video information (col. 4 lines 43-46, the system being a television receiver obtaining a reception image) represented by a multiple level symbol constellation (figs. 2A-2C), the data having a data frame format constituted by a succession of data frames (it is necessary that a television receiver receive data images in succession), the adaptive channel equalizer generating a first output signal which is input to the slicer (the output from 1 and 2 in fig. 8), the slicer generating a second output signal which is input to the monitoring circuit (the output of slicer 4A into component 32 in fig. 8); the monitoring circuit applying a test criteria to the second output signal to determine convergence of the adaptive channel equalizer (col. 17 lines 4-7, test criterion being a logic "0" or "1").

In the current embodiment, Ogawa fails to teach wherein the second output signal containing permissible symbol values of a symbol constellation used in transmission of a signal in the digital communication system. However, in a different embodiment, Ogawa teaches creating an output signal containing permissible symbol values of a symbol constellation used in transmission of a signal to the apparatus (col. 11 lines 1-5 and 45-48, the estimated value $w(n)$ is one of the central values of the numerical regions G_1 to G_8 which is part of an 8 VSB code signal)

Therefore, taking the combined embodiments as taught by Ogawa as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the decision device of the second embodiment into the apparatus of the first embodiment. The motivation to combine the two embodiments would be to discriminate to which one of a numerical region that is defined to have a normal code value free from any modulation due to disturbance as a central value (col. 10 lines 42-46).

Re claims 15 and 17, the modified invention of Ogawa teaches a system wherein the test criteria for determining convergence requires identifying at least some transmitted symbol values (col. 16 lines 58-63).

Re claim 16, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 2.

Re claim 18, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 11.

Re claim 24, Ogawa teaches a method for use in determining equalizer convergence, the method comprising the steps of:

slicing an equalizer output signal (the output $y_2(n)$ of IIR filter 2 is sliced in slicer 4A in fig. 3) to provide a sequence of symbols (col. 11 lines 62-67), each symbol taken from a constellation of possible transmitted symbols (col. 13 lines 5-14).

Ogawa fails to teach testing at least a plurality of symbols of the sequence to determine if the equalizer is converged or not. However in a different embodiment, Ogawa teaches testing at a training sequence (col. 16 lines 42-50), which is part of a received code sequence (col. 16 lines 18-20), to determine if the equalizer is converged or not (col. 16 lines 58-63).

Therefore, taking the combined embodiments as taught by Ogawa as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate testing method of the second embodiment into the method of determining convergence of the first embodiment. The motivation to combine the two embodiments would be to shorten the convergence time (col. 17 lines 60-62).

3. Claims 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al (US5781463) in view of Nam (US6515713) for the same reasons set forth in the previous office action.

4. Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al (US5781463) in view of Nozue (US4697265) for the same reasons set forth in the previous office action.

Response to Remarks

Applicant asserts that the second slicer of Ogawa does not output a decision device output signal containing permissible symbol values. Examiner agrees. However, if taking slicer 4A in fig. 8 to be the decision device, then the output signal would be interpreted to contain permissible values. From applicant's specification, permissible values are understood to be any values that are transmitted (col. 7 lines 9-14). Ogawa discloses that slicer 4A outputs the estimated value $w(n)$ of the received code value $u(n)$ (col. 11 lines 62-64). The estimated value $w(n)$ is one of the central values of the numerical regions G_1 to G_8 (col. 11 lines 1-5) which is part of an 8 VSB code signal shown in fig. 4 (fig. 4, col. 11 lines 26-31). Therefore it is interpreted that the slicer output a signal containing the estimated or permissible values of the VSB code signal.

Regarding claims 2-18, no specific issue was raised. Patentability of these claims is contingent upon the merits of their respective independent claims.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon-Viet Q. Nguyen whose telephone number is 571-270-1185. The examiner can normally be reached on monday-friday, alternate friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Nguyen/


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER